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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/609,496 | 07/01/2003 | Tsung-Lin Lee | 0941-0785P | 1667 |

2292 7590 03/21/2007
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
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| EXAMINER |
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LU, JIA

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| ART UNIT | PAPER NUMBER |
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2611

| SHORTENED STATUTORY PERIOD OF RESPONSE | NOTIFICATION DATE | DELIVERY MODE |
|--|-------------------|---------------|
| 3 MONTHS | 03/21/2007 | ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/21/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

| | | | |
|------------------------------|-------------------------------|----------------------------|--|
| Office Action Summary | Application No. 10/609,496 | Applicant(s) LEE ET AL. | |
| | Examiner Jia Lu | Art Unit 2611 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8 and 16-20 is/are allowed.
- 6) ☒ Claim(s) 9-11, 14 and 15 is/are rejected.
- 7) ☒ Claim(s) 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

Applicant's arguments filed on 12/14/06 have been fully considered but they are not persuasive.

Regarding claim 9, applicant argues that Thomas does not suggest "partitioning a constellation into two groups based upon the location of each bit."

Thomas does not describe dividing a constellation into a group of ones and a group of zeros. However, Thomas describes determining a bit to be zero or one based on its probability of being either a zero or a one. This process results in a group of ones and a group of zeros, which is the same result obtained using the "partitioning" method as claimed. Further, as the estimated probability is not specified in Thomas, it may be any value between 0 and 1. As the probability approaches 1, Thomas's metric system behaves in the same manner as applicant's invention.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 5,896,405, in view of US application publication 2002/0051498. '405 shows a receiver comprising a de-interleaver (figure 4, elements 41 & 42), a dynamic quantizer (element 53) and Viterbi decoder which inherently receives symbols modulated with a constellation (element 54). While '405 does not describe the details of the Viterbi decoder, including a metric generator for partitioning signals into zeros and ones, such a feature is well known in the art, as described in '498 (paragraph 0108). '498 describes determining a bit to be zero or one based on its probability of being either a zero or a one. This process results in a group of ones and a group of zeros, which is the same result obtained using the "partitioning" method as claimed. As the estimated probability is not specified in '498, it may be any value between 0 and 1. As the probability approaches 1, the metric system of '498 behaves in the same manner as claimed invention. Further, the metric generator of '498 uses received complex signals (paragraph 0107) and channel-state information value associated with each complex signal (paragraph 0096). It would have been obvious to one ordinarily skilled in the art to include this metric generator in the Viterbi encoder of '405 in order to aid in the proper procedures of the decoding process.
2. Claims 10, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 5,896,405 and publication 2002/0051498, further in view of US patent 7,099,410. While above references do not show the de-interleaver to provide a real part for even bits and an imaginary part for odd bits, such a feature is well

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known in the art ('410 column 10, lines 52-62), and it would have been obvious to one ordinarily skilled in the art to include this feature in the receiver '405 in order to further reduce its complexity.

3. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 5,896,405 and publication 2002/0051498, further in view of US application publication 2002/0186797. While 'references used above do not teach the receive to comply to DVB-T standards, such a feature is well known in the art, as described in '797 (abstract and paragraph 0069). It would have been obvious to one ordinarily skilled in the art for the receiver to comply with DVB-T standards in order conform to accepted standards in broadcasting and thereby increasing the compatibility and marketability of the receiver.

Allowable Subject Matter

4. Claims 1-8, 16-20 are allowed.
5. Claims 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jia W. Lu whose telephone number is 571-272-6042. The examiner can normally be reached on Mon- Fri, 10:30AM-6:30PM.

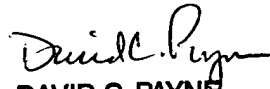
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571)272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jia Lu

Examiner


DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER